

(U) What is claimed is:

1        (a) 1. In a semiactive radar guidance system for a  
2        guided missile, such system including a heterodyne  
3        receiver wherein the frequency of a first local  
4        oscillator is required to be rendered coherent with  
5        the frequency of echo signals from a target being  
6        tracked by a frequency control signal from automatic  
7        frequency control circuitry, such circuitry being  
8        susceptible to vibration during flight to assume  
9        one of two stable conditions, the first of such  
10       conditions being one in which the frequency control  
11       signal has the proper amplitude and polarity to  
12       maintain coherency and the second of such conditions  
13       being one in which the polarity of the frequency  
14       control signal has an incorrect polarity, the  
15       improvement comprising:

16                (a) first means, responsive to vibration-induced  
17                changes in the automatic frequency control  
18                circuitry from one stable condition to the  
19                other, for generating a control signal  
20                indicative of such change; and

21                (b) second means, responsive to the control  
22                signal, for correcting the polarity of the  
23                frequency control signal.

1     ~~(c)~~ 2. The improvement as in claim 1 wherein the  
2     first means is a differentiator responsive to change  
3     in the polarity of the frequency control signal.

1     ~~(c)~~ 3. The improvement as in claim 2 wherein the  
2     second means comprises a phase lock loop incorporating  
3     the combination of a synchronous detector having a  
4     first and a second input and an output terminal, a  
5     voltage controlled oscillator and a narrow band  
6     summing amplifier, a signal representative of a  
7     target being tracked being applied to the first input  
8     terminal, the output signal of the voltage controlled  
9     oscillator being connected to the second input  
10    terminal, the summing amplifier being disposed in  
11    circuit between the output terminal and the voltage  
12    controlled oscillator with the control signal applied  
13    to a second input terminal of such amplifier.

PJM:mm